

REMARKS

In this Response, Applicants amend claims 1 and 7 and traverse the Examiner's objections and rejections. Applicants respectfully suggest that the amendments materially reduce and/or simplify issues in the application and place the application in better form for appeal, should an appeal be necessary. Additionally, Applicants respectfully suggest that no additional search is required in that the amendments only serve to provide proper antecedent basis for the features in the claims and to correct minor typographical errors. Accordingly, Applicants respectfully request that the amendments be entered and that the rejections be reconsidered in light of the Remarks to follow.

Applicants' silence with regard to the Examiner's rejections of dependent claims constitutes a recognition by the Applicants that the rejections are moot based on Applicants' Remarks relative to the independent claim from which the dependent claims depend. Applicants reserve the option to further prosecute the same or similar claims in the present or a subsequent application. Upon entry of the amendments, claims 1-5 and 7-31 are pending in the present application.

Drawings

Applicants believe the replacement drawing attached to this paper provides the corrections as required by the Office Action, and that all changes have been adequately described above.

Claim Objections

The Examiner objected to claim 1 for lacking proper antecedent basis for the term "the first electromagnetic signal" and to claim 7 for lacking a period at the end thereof. Applicants amend claims 1 and 7 to correct the informalities noted by the Examiner.

Claim Rejections - 35 U.S.C. § 103(a)

The Examiner rejected claims 1-3, 6-9, 11-14, 20, and 22-31 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,137,282 to Macke, Sr. et al. in view of U.S. Patent No. 6,023,970 to Blaine.

Applicants' amended independent claim 1 requires, among other things, a transmitter operable to drive the first electromagnetic signal along the first conductive element without also driving the second conductive element, which a receiver monitors. By thus refraining from driving the second conductive element, Applicants avoid interference (e.g., ringing, saturation, etc.) that results from the receiver monitoring a conductor that the transmitter drives directly. Avoiding this interference increases the detection and measurement capabilities of the receiver in embodiments of the current invention.

Macke, Sr. et al. discloses that electrical pulses are transmitted down cables 304 and 306 from a pulse source that is part of time-domain reflectometry (TDR) electronic components 302 (col. 4, line 66 to col. 5, line 16). That is Macke, Sr. et al.'s TDR electronic components 302 drive both conduction elements 304 and 306, which Macke, Sr. et al.'s receiver monitors. As noted by the Examiner, Macke, Sr. et al. does not teach or suggest a transmitter operable to drive a first electromagnetic signal along a first conductive element without also driving a receiver-monitored second conductive element, as recited in Applicants' independent claim 1.

Blaine describes a sensor to detect the presence or absence of fluid by determining whether there is a change in reflected or resonated energy (Abstract). Blaine does not measure a time differential between transmitted and received signals, as do the TDR electronic components in Macke, Sr. et al. The basic operating principal of Blaine is incompatible with that of Macke, Sr. et al. As the Examiner knows, obviousness requires a motivation or suggestion to combine or modify the references with a reasonable expectation of success, wherein the prior art teaches or suggests all of Applicants' limitations. Since one of skill in the art would not be motivated to combine a TDR apparatus (as in Macke, Sr. et al.) with an apparatus measuring changes in resonated energy (as in Blaine), Applicants

respectfully suggest that the Examiner has not established a prima facie case of obviousness. There can be no reasonable expectation of success in combining the references since the references operate on different principles and provide different measurements. Macke, Sr. et al. provides discrete input dependent on the placement of a high conductivity material near the conductor. Blaine only provides an indication that a liquid is or is not present at a particular point where the sensor is placed. Thus, Applicants' independent claim 1 is patentable over Macke, Sr. et al. in view of Blaine.

Applicants' independent claims 20 and 31 contain elements similar to those of Applicants' independent claim 1. Therefore, for the reasons given above, Applicants' independent claims 20 and 31 are patentable over Macke, Sr. et al. in view of Blaine.

Claims 2-5, 7-19 and 25-27 depend directly or indirectly from independent claim 1. Claims 21-24 and 28-30 depend directly or indirectly from independent claim 20. Therefore, these dependent claims are also allowable, at least by dependency.

The Examiner rejected dependent claims 4, 5, 15-18 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Macke, Sr. et al. and Blaine in view of U.S. Patent No. 6,229,476 to Lutke et al. Claims 4, 5 and 15-18 depend from independent claim 1 and claim 24 depends from independent claim 20 and claims 4, 5, 15-18 and 24 are allowable at least by dependency. As discussed above, there is no motivation to combine Macke, Sr. et al. and Blaine. Further, Lutke et al. does not teach or suggest a transmitter operable to drive a first electromagnetic signal along a first conductive element without also driving a second conductive element, as recited in Applicants' independent claims 1 and 20. Thus, claims 4, 5, 15-18 and 24 are patentable over Macke, Sr. et al. and Blaine in view of Lutke et al.

The Examiner then rejected dependent claims 10 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Macke, Sr. et al. in view of U.S. Patent No. 5,910,188 to Resnick. The Examiner next rejected dependent claim 19 under 35 U.S.C. § 103(a) as being unpatentable over Macke, Sr. et al. in view of U.S. Patent No. 6,373,261 to Kielb et al.

As noted by the Examiner, Macke, Sr. et al. does not teach or suggest all the elements of Applicants' independent claims 1 and 20. In addition, neither Resnick nor Kielb et al. teach or suggest a transmitter operable to drive the first electromagnetic signal along the first conductive element without also driving the second conductive element. Thus, claims 10, 19 and 21 are patentable over Macke, Sr. et al. in view of Resnick and/or Kielb.

CONCLUSION

Applicants believe this Amendment and Response to be fully responsive to the present Office Action. Thus, based on the foregoing Remarks, Applicants respectfully submit that this application is in condition for allowance. Accordingly, Applicants request allowance of the application.

Applicants invite the Examiner to contact the Applicants' undersigned Attorney if any issues are deemed to remain prior to allowance.

Respectfully submitted,

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IN THE DRAWINGS:

The attached replacement sheet 2 of 9 includes changes to Fig. 2, providing a reference numeral for container 208.